

1 1. A method comprising:
2 determining for a channel, channel prediction terms from both first
3 channel estimation terms derived from first common pilot channel signal and second
4 channel estimation terms derived from second common pilot channel signal; and
5 enabling control over future transmission patterns of the channel using the
6 channel prediction terms.

1 2. The method of claim 1, including predicting a future state of the channel at
2 a specified time based on the channel prediction terms.

1 3. The method of claim 2, including storing the first and second channel
2 estimation terms in order to determine the channel prediction terms in response to the
3 first and second common pilot channel signals, respectively.

1 4. The method of claim 3, including adaptively calculating the channel
2 prediction terms from the first and second channel estimation terms in one or more
3 iterations.

1 5. The method of claim 4, wherein adaptively calculating includes:
2 receiving antenna transmission characteristics associated with one or more
3 antennas of a plurality of antennas in order to controllably adjust the future transmission
4 patterns of the channel; and
5 selecting at least one antenna transmission characteristic from the antenna
6 transmission characteristics based on the channel prediction terms.

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1 6. The method of claim 4, wherein adaptively calculating includes receiving
2 one or more weighted values associated with one or more antennas of a plurality of
3 antennas where said first common pilot channel signal is from a first antenna of the
4 plurality of antennas and said second common pilot channel signal is from a second
5 antenna of the plurality of antennas.

1 7. The method of claim 5, including using a feedback signal based on the
2 channel prediction terms to control the future transmission patterns of the channel
3 according to the future state of the channel at the specified time.

1 8. The method of claim 6, including:
2 selecting at least one weighted value from the one or more weighted
3 values based on the channel prediction terms;
4 providing the at least one weighted value to the first and second antennas
5 to accurately assess the future state of the channel at the specified time; and
6 separating first and second channel propagation paths associated with the
7 first and second antennas based on the first and second common pilot channel signals.

1 9. The method of claim 8, including estimating phase and magnitude of the
2 channel for the first and second channel propagation paths to derive the first and second
3 channel estimation terms.

1 10. The method of claim 4, wherein the first channel estimation terms
2 correspond to a channel estimation term calculated in at least one iteration prior to a
3 current iteration of the one or more iterations.

1 11. The method of claim 10, wherein the second channel estimation terms
2 correspond to a channel estimation term calculated in the current iteration of the one or
3 more iterations.

1 12. The method of claim 6, including operating the first and second antennas
2 of the plurality of antennas in a closed loop transmit diversity mode.

1 13. The method of claim 12, including providing feedback, including the at
2 least one weighted value of the one or more weighted values, to the first and second
3 antennas of the plurality of antennas.

1 14. The method of claim 13, including controlling at the specified time a
2 transmission pattern over the channel from at least one antenna of the first and second
3 antennas to match the future state of the channel and substantially reduce the effective
4 loop delay in the closed loop transmit diversity mode.

1 15. An apparatus comprising:
2 a communication interface; and
3 a processor communicatively coupled to the communication interface, the
4 processor to determine for a channel, channel prediction terms from both first channel
5 estimation terms derived from first common pilot channel signal and second channel
6 estimation terms derived from second common pilot channel signal and to enable control
7 over future transmission patterns of the channel using the channel prediction terms.

1 16. The apparatus of claim 15, wherein the processor predicts a future state of
2 the channel at a specified time based on the channel prediction terms.

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1 17. The apparatus of claim 15, further comprising:
2 a storage coupled to the processor to store the first and second channel
3 estimation terms in order to determine the channel prediction terms in response to the
4 first and second common pilot channel signals, respectively.

1 18. The apparatus of claim 17, wherein the processor adaptively calculates the
2 channel prediction terms from the first and second channel estimation terms in one or
3 more iterations.

1 19. The apparatus of claim 18, wherein the processor:
2 receives antenna transmission characteristics associated with one or more
3 antennas of a plurality of antennas in order to controllably adjust the future transmission
4 patterns to the channel; and
5 selects at least one antenna transmission characteristic from the antenna
6 transmission characteristics based on the channel prediction terms.

1 20. The apparatus of claim 19, wherein the processor:
2 provides a feedback signal based on the channel prediction terms to
3 control the future transmission patterns of a transmitter according to the future state of the
4 channel at the specified time.

1 21. The apparatus of claim 18, wherein the processor:
2 receives one or more weighted values associated with one or more
3 antennas of a plurality of antennas, said first common pilot channel signal is from a first
4 antenna of the plurality of antennas and said second common pilot channel signal is from

5 a second antenna of the plurality of antennas to operate first and second antennas in a
6 closed loop transmit diversity mode;
7 provides feedback having the at least one weighted value of the one or
8 more weighted values to the first and second antennas; and
9 controls at the specified time the future transmission patterns over the
10 channel from at least the first and second antennas of the plurality of antennas.

1 22. An article comprising a medium storing instructions that enable a
2 processor-based system to:

3 determine for a channel, channel prediction terms from both first channel
4 estimation terms derived from first common pilot channel signal and second channel
5 estimation terms derived from second common pilot channel signal; and
6 enable control of future transmission patterns of the channel using the
7 channel prediction terms.

1 23. The article of claim 22, further storing instructions that enable the
2 processor-based system to predict a future state of the channel at a specified time based
3 on the channel prediction terms.

1 24. The article of claim 23, further storing instructions that enable the
2 processor-based system to store the first and second channel estimation terms in order to
3 determine the channel prediction terms in response to the first and second common pilot
4 channel signals, respectively.

1 25. The article of claim 24, further storing instructions that enable the
2 processor-based system to:

3 adaptively calculate the channel prediction terms from the first and second
4 channel estimation terms in one or more iterations; and
5 receive antenna transmission characteristics associated with one or more
6 antennas of a plurality of antennas in order to controllably adjust the future transmission
7 patterns of the channel; and
8 select at least one antenna transmission characteristic from the antenna
9 transmission characteristics based on the channel prediction terms.

1 26. The article of claim 25, further storing instructions that enable the
2 processor-based system to:
3 receive one or more weighted values associated with one or more antennas
4 of a plurality of antennas, said first common pilot channel signal is from a first antenna of
5 the plurality of antennas and said second common pilot channel signal is from a second
6 antenna of the plurality of antennas;
7 select at least one weighted value from the one or more weighted values
8 based on the channel prediction terms;
9 provide feedback having the at least one weighted value of the one or
10 more weighted values to the first and second antennas of the plurality of antennas; and
11 control at the specified time a transmission pattern over the channel from
12 at least one antenna of the first and second antennas.

1 27. A wireless device comprising:
2 a communication interface;
3 a processor coupled to the communication interface; and
4 a storage coupled to the processor, said storage storing instructions to:

5 determine for a traffic channel directed to the communication
6 interface, channel prediction terms from both first channel estimation terms derived from
7 first common pilot channel signal and second channel estimation terms derived from
8 second common pilot channel signal,
9 predict a future state of the traffic channel at a specified time based
10 on the channel prediction terms, and
11 control future transmission patterns using the future state of the
12 traffic channel at the specified time.

1 28. The wireless device of claim 27 comprises a transceiver adapted to
2 communicate with a base transceiver in a closed loop transmit diversity mode.

1 29. A mobile transceiver comprising:
2 a communication interface;
3 a processor coupled to the communication interface; and
4 a storage coupled to the processor, said storage storing instructions to:
5 determine for a traffic channel directed to the communication
6 interface, channel prediction terms based on channel estimation terms derived from
7 common pilot channel signals of at least two antennas,
8 in response to the common pilot channel signals, provide feedback
9 information over a feedback channel to predict a future state of the traffic channel at a
10 specified time, and
11 control future transmission patterns over the at least two antennas
12 using the future state of the traffic channel at the specified time.

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30. The mobile transceiver of claim 29 comprises one or more antennas coupled to the communication interface, said one or more antennas adapted to communicate with a base station in a closed loop transmit diversity mode.

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